

MYSTIC AIR QUALITY 3-99

March 15, 1999

Tunxis Management Company
One Liberty Square
P.O. Box 488
New Britain, Connecticut 06050
Attn: Ms. Vibha Buckingham

Re: Indoor Air Quality Sampling (March 5, 1999)
25 Sigourney Street
Hartford, Connecticut

Encl: (1) Ambient Air Sample Results
(2) Bioaerosol Screening (Common Total Culturable Fungi) Sample Results

Dear Ms. Buckingham:

As requested, on March 5, 1999 Mystic Air Quality Consultants, Inc. conducted indoor air quality sampling at the site referenced above. The sampling was conducted as part of a general indoor air quality investigation.

Enclosure (1) contains the ambient gas, vapor, temperature and humidity air sample results. Enclosure (2) contains the bioaerosol sample results. Sampling was conducted using direct reading instruments for hydrogen sulfide, carbon dioxide, carbon monoxide, combustible gases, oxygen, total hydrocarbons, respirable particulates and temperature/humidity. At the time of the survey hydrogen sulfide, carbon monoxide, carbon dioxide, combustible gases, oxygen, total hydrocarbons, respirable particulates and temperature levels were within applicable standards. Additionally, no objectionable odors were noted in the areas tested.

Bioaerosol sampling for common total culturable fungi was conducted using an Anderson Single Stage, Impaction, Microbial Sampler. A potato dextrose agar base was used in conjunction with 10 centimeter plates. Spores are identified only to the species level and only common fungi are speciated. A total count is numerically derived for both speciated and non-speciated fungi. Since there are no consensus health-based standards for bioaerosol levels, as

recommended by the American Conference of Governmental Industrial Hygienists, (Bioaerosols, Assessment and Control, 1999) samples are interpreted in conjunction with a visual walkthrough of the facility that attempts to identify potential microbial sources and symptoms of building occupants that could potentially be linked to microbial growth.

The bioaerosol samples exhibited typically normal growth for indoor environments, and no unusual fungi were noted on the bioaerosol samples. Indoor levels were comparative to outdoor levels in response to acceptable growth.

Please note that certain individuals may exhibit hypersensitive or allergic symptoms in environments where there are contaminants below set standards or detectable limits.

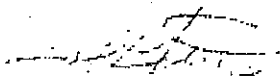
Although all bioaerosol samples exhibited typical growth water leaks were noted along the perimeter windows in various areas of the building. Chronic leaks significantly increase the potential for indoor microbial growth. The water infiltration has damaged the carpets along the perimeter where the leaks occur. Fungi have been shown to be capable of germination and growth in as little as twenty-four hours after water damage has occurred. It is therefore, recommended that the leaks be repaired and the carpeting along with any other porous water damaged building materials be replaced. Non-porous water damaged surfaces such as the concrete floor should be treated with an applicable biocide such as a sodium hypochlorite (household bleach) solution used in a 1:10 dilution with water. The material safety data sheets and all applicable directions for any antimicrobial agent used must be adhered too. Individuals must be trained and use the proper personal protective equipment. All replacement and antimicrobial application must occur while the building is unoccupied and the ventilation system is shut down.

The relative humidity in the areas tested was below the range of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) recommended comfort level of 30%-60%. Please note that the levels in the facility are consistent with many buildings in New England during the winter months because of the low outside humidity. If building occupants experience dryness of their mucous membranes an increase in water intake is recommended to alleviate the symptoms. Humidification systems are not recommended because unless they are rigorously maintained they can become a source for microbial growth.

Finally, it was noted that throughout the building that occupants have either closed or redirected the supply vents to the occupied spaces. These actions cause the ventilation system to become unbalanced and limits the fresh air supply that is delivered to the space. It is recommended that all vents be opened as designed. Some of the occupant's desks are directly below the supply vents. If occupants experience a draft from a vent it is recommended that administrative controls be implemented to assign particular individuals to desk areas that are not directly below supply vents. Additionally, the heating, ventilation and air-conditioning system should continue to be maintained according to the manufacturer's recommendations.

If you have any questions or concerns please do not hesitate to contact me directly.

Sincerely,



David H. Goldstein, MS, CIH
Vice President

Mystic Air Quality Consultants, Inc.

1204 North Road, Groton, Connecticut 06340 (203) 449-8903

AMBIENT AIR SAMPLE RESULTS

LOCATION: 25 Sigourney Street
Hartford, Connecticut

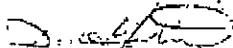
DATE: March 5, 1999

Testing from 1025-1330

SAMPLE LOCATION	H2S hydro- gen sulfide ppm	CO2 carbon- dioxide ppm Ave.	CO carbon mon- oxide ppm	O2 oxygen %	Total hydro- carbons ppm	Temp- erature F	Humi- dity %	Respirable Particulates mg/m3	% LEL Combustible Gases	Other	Other
17 th Floor John Hucheson	<1	665	<1	20.8	<1	74	18	0.002	<1	-	-
17 th Floor Joe Duffy	<1	660	<1	20.8	<1	74	17	0.002	<1	-	-
17 th Floor G. Boyajian	<1	884	<1	20.8	<1	76	20	0.004	<1	-	-
17 th Floor Al Jenkins	<1	750	<1	20.8	<1	76	20	0.004	<1	-	-
17 th Floor B. Gedraitis	<1	750	<1	20.8	<1	76	17	0.004	<1	-	-
Outside	-	335	-	-	-	41	18	-	-	-	-
Standards	10 ppm OSHA	1000 ASH- RAE 1,000 OSHA	50 ppm OSHA	19.5- 23.5% OSHA	Various	68-76 Winter ASH- RAE	30- 60% ASH- RAE	5.0 mg/m3 OSHA	10% OSHA	-	-

Sampling Instrumentation: O2, %LEL, CO, H2S - Gastech Gx-82 Combustible Gas Meter
Total Hydrocarbons - Hnu Photoionization Detector; Temperature/Humidity - TSI, Q-Trak;
CO2 - TSI, Q-Trak; Respirable Particulates - Realtime Aerosol Meter

Industrial Hygienist: David Goldstein, MS, CIH



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AMBIENT AIR SAMPLE RESULTS

LOCATION: 25 Sigourney Street
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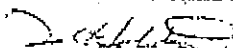
DATE: March 5, 1999

Testing from 1025-1330

SAMPLE LOCATION	H ₂ S hydro- sulfide ppm	CO ₂ carbon- dioxide ppm Ave.	CO carbon- mon- oxide ppm	O ₂ oxygen %	Total hydro- carbons ppm	Temp- erature F	Humi- dity %	Respirable Particulates mg/m ³	% LEL Combustible Gases	Other	Other
14 th Floor D. Ostergren	<1	735	<1	20.8	<1	76	17	0.005	<1	-	-
14 th Floor M. Cook	<1	830	<1	20.8	<1	75	18	0.01	<1	6 People in Office	-
14 th Floor D. Larson	<1	670	<1	20.8	<1	76	18	0.005	<1	-	-
14 th Floor L. Coco	<1	770	<1	20.8	<1	76	18	0.006	<1	-	-
14 th Floor L. Latney	<1	725	<1	20.8	<1	76	16	0.007	<1	-	-
Outside	-	335	-	-	-	41	18	-	-	-	-
Standards	10 ppm OSHA	1000 ASH- RAE 5,000 OSHA	50 ppm OSHA	19.5- 23.5% OSHA	Various	68-76 Winter ASH- RAE	30- 60% ASH- RAE	5.0 mg/m ³ OSHA	10% OSHA	-	-

Sampling Instrumentation: O₂, %LEL, CO, H₂S - Gastech Gx-82 Combustible Gas Meter
Total Hydrocarbons - Hnu Photoionization Detector; Temperature/Humidity - TSI, Q-Trak;
CO₂ - TSI, Q-Trak; Respirable Particulates - Realtime Aerosol Meter

Industrial Hygienist: David Goldstein, MS, CIH



BIOAEROSOL SURVEY RESULTS

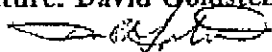
LOCATION: 25 Sigourney Street
Hartford, Connecticut

DATE: March 5, 1999

SAMPLE LOCATION	Exposure Time (minutes) at 28.0 liters/min.	Total #CFU	Species Type	#CFU/M ³
17 th Floor John Hutcheson	1.0	5	1C 2P 2R	179
17 th Floor Joe Duffy	1.0	8	2P 2C 4Y	286
17 th Floor G. Boyajian	1.0	1	1C	36
17 th Floor Al Jenkins	1.0	5	1A 1C 2P 1Y	179
17 th Floor B. Gedraitis	1.0	3	1R 2Y	107
Outside	1.0	31	3C 9P 9R 7Y 3O	1107

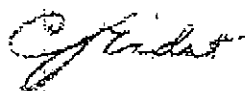
Note: All samples corrected for Laboratory Blank <1 CFU.

Sampler's Signature: David Goldstein, MS, CIH



Date: March 5, 1999

Analyst's Signature: Christopher J. Eident, CIH, CSP, RS Date: March 11, 1999



BIOAEROSOL SURVEY RESULTS

LOCATION: 25 Sigourney Street
Hartford, Connecticut

DATE: March 5, 1999

SAMPLE LOCATION	Exposure Time (minutes) at 28.0 liters/min.	Total #CFU	Species Type	#CFU/M ³
14 th Floor D. Ostergren	1.0	7	7P	250
14 th Floor M. Cook	1.0	4	3P 1Y	143
14 th Floor D. Larson	1.0	2	1P 1Y	71
14 th Floor L. Coco	1.0	6	2P 1Y 3R	214
14 th Floor L. Latney	1.0	6	3C 2P 1R	214
Outside	1.0	31	3C 9P 9R 7Y 3O	1107

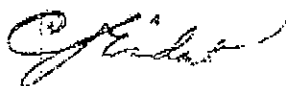
Note: All samples corrected for Laboratory Blank <1 CFU.

Sampler's Signature: David Goldstein, MS, CIH



Date: March 5, 1999

Analyst's Signature: Christopher J. Eident, CIH, CSP, RS Date: March 11, 1999



KEY TO BIOAEROSOL SURVEY RESULTS

Active Plate Sample = This sample was taken with a sampling plate using an air sampling device. The airborne fungal spores were impacted onto a sampling plate, incubated, and identified. Mystic Air Quality takes the bioaerosol samples with an Andersen Single Stage Microbial Impacter in conjunction with potato dextrose agar in a 10 centimeter plate.

CFU = Colony Forming Units (Total Culturable Fungi)

MIN = Number of minutes that the sampling plates were exposed to the surrounding air, by active sampling. Samples are taken at 28 liters per minute.

CFU/M³ = Colony Forming Units per Cubic Meter. This number shows the concentration of airborne fungal spores per cubic meter of air.

NG = No Growth detected on the agar plates.

SPP. TYPE = Spores are identified only to the species level. The total number of colony forming units includes both speciated and non-speciated cultures. None speciated spores are identified as Other (O).

TNTC = Too numerous to count. The amount of microorganisms grown on the media is too abundant to determine the airborne concentration.

PREDOMINANT SPECIES DESIGNATIONS

A = Aspergillus Species

Y = Yeasts

P = Penicillium Species

ALT = Alternaria Species

F = Fusarium Species

R = Rhodotorula Species

O = Other Species

C = Cladosporium Species